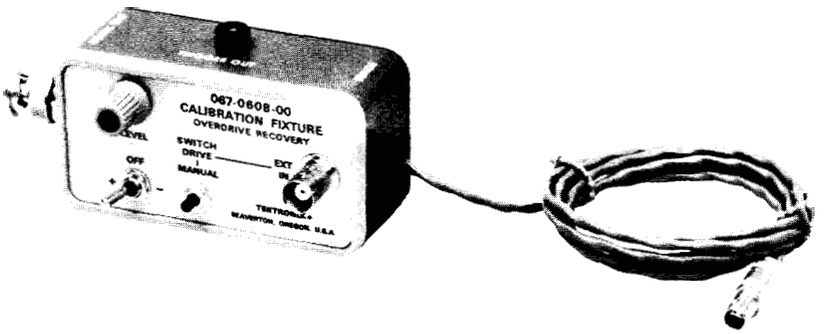
Serial Number _____

067-0608-00 CALIBRATION FIXTURE

Overdrive Recovery



The Tektronix Type 067-0608-00 Calibration Fixture is designed to provide overdrive signals for measuring the overdrive recovery time of Tektronix plug-in amplifiers.

The fixture produces a + or - 11 V overdrive signal with a 7ns falltime (reference to the output and into a 50 pF or less load). It can be switched manually or driven by an external switch-drive source such as a Tektronix Type 106 Squarewave Generator. The BNC output of the fixture is designed to connect directly to the input of the amplifier under test. Power for operating the device is supplied by the 7000-Series Oscilloscope used in the test, via the probe-power-out connector on the rear of the instrument. A separate power source such as a Tektronix Type 1101 is required for operating the fixture with plug-in amplifiers other than 7-Series.

CONTENTS

SECTION 1

CHARACTERISTICS

ELECTRICAL

Characteristic	Performance Requirement	Supplemental Information
Power Requirements		
Voltage	+15 V DC and - 15 V DC	Fixture supplied with power plug for operation with 7000-Series Oscilloscopes.
Current	250 mA each supply	
Switch Drive Requirements		
Voltage	At least 6 V to 60 V or less depending on repetition rate of drive signal	
Repetition Rate	DC to 800 Hz	Depends on resonant frequency of particular reed switch used in fixture
Overdrive Output Signal		
Fall time	7 ns or less into 1 MR, 50 pF	
Variations from Zero Level	10 mV or less after 100 ns	
Amplitude	Continuously variable from +100 mV or less to at least +11 V, or from - 100 mV or less to at least -11 V.	
Output Resistance	50 Ω within 10%	

MECHANICAL

Characteristic	Requirement	Supplemental Information
Construction		
Housing	Cast front and rear sub-panel; blue vinyl painted aluminum, wrap-around cabinet	
Panel	Anodized aluminum	
Circuit Board	Glass-Epoxy Laminate	
Overall Dimensions		
Height	1-15/16 inches	
Width	4-5/8 inches	
Depth	2-1/8 inches	

ENVIRONMENTAL

Characteristic	Requirement	Supplemental Information
Temperature		
Operating Range	0° C to +50° C	
Warmup Time	None	

FRONT PANEL SWITCHES

Controls, Switches and Connectors

LEVEL Control

Continuously variable control adjusts the amplitude of the overdrive signal.

Polarity Switch

Three-position toggle switch selects a positive-going (+) or negative-going (-) overdrive signal, or turns the overdrive signal OFF.

SWITCH DRIVE

EXT IN Connector

BNC-type connector couples the external SWITCH-DRIVE signal to the fixture. The duration of overdrive signal is determined by the duration of the applied signal.

MANUAL Pushbutton

Pushbutton switch removes the SWITCH DRIVE signal supplied to the EXT IN connector, and applies the overdrive signal as long as the MANUAL pushbutton is depressed.

SIGNAL OUTPUT Connector

BNC-type connector couples the fixture output directly to the input of the amplifier under test.

TRIGGER OUT Connector

Banana-plug jack provides an output signal for externally triggering the Oscilloscope time-base.

POWER Input Plug

Special 4-pin Lemo connector with permanently attached power cord, connects to probe-power-output of the Type 7000-Series Oscilloscope under test.

SECTION 2

OPERATING INSTRUCTIONS

The following procedure describes the basic operation of the Overdrive Recovery Tester when used with a Tektronix 7-series Amplifier Plug-in Unit operating in a 7000-series Oscilloscope. Detailed information for checking the recovery time specified for a particular plug-in amplifier will be found in the instruction manual supplied with the instrument.

Establishing a Reference Display

Connect the **OUTPUT** of the fixture to the input of the 7-series amplifier under test. Connect the power plug to the probe-power-out jack located on the rear panel of the oscilloscope. Install a BNC cable on the high amplitude output of a Tektronix Type 106 Squarewave Generator using a GR-to-BNC adapter, 017-0063-00. Connect the other end of the cable to the switch drive EXT IN connector on the fixture. Install a BNC-to-banana plug patch cord, 012-0090-00, from the TRIGGER OUT jack of the fixture to the external-trigger input connector on the oscilloscope time-base (This connection should be made through a X10 attenuator if overdrive signal exceeds 2 V). Set the input coupling switch of the vertical amplifier at DC and deflection factor for 2V/div. Set the horizontal time base at 1 ms/div. Set the fixture polarity switch at + and LEVEL control fully ccw. Set the Type 106 Repetition Rate Range at 100 Hz, Multiplier at 5, Symmetry and Amplitude at midrange, and Hi Amplitude/Fast Rise at Hi Amplitude. Adjust the Type 106 Repetition Rate, and (if necessary) the Amplitude controls for audible reed resonance. CAUTION: Do not exceed the midrange setting of the Type 106 Amplitude control, as excessive amplitude will cause the fixture reed drive coil to overheat. Adjust the fixture LEVEL control to obtain a 5 div. display amplitude. If necessary, adjust the time-base triggering controls for a stable display, as shown in Fig. 1. Using the position controls, position the bottom of the display to coincide with the graticule centerline and to start at the l-division graticule line as shown in Fig. 2.

Making the Measurement

The amplifier deflection factor and time-base sweep speed used in this portion of the procedure depend on the overdrive recovery characteristic to be checked. For purpose of illustration, we will assume a characteristic of 1 us to recover within 1.5 mV.

Set the Time/Div switch to 0.2 µs, increase the trace intensity and use the time-base Position control to reposition, if necessary, the bottom front corner of the display to start at the l-division graticule line that will be used as a time reference. Set the Amplifier deflection factor to 1 mV/div. Switch the fixture polarity to '0' and use vertical Position control to reposition the trace to graticule center. This is the zero amplitude reference. Switch the fixture polarity to +. Check the trace for a return to

within 1.5 divisions of the graticule vertical center within a recovery time of 1 µs (5 horizontal divisions) as measured from the 1-division line (see Fig. *3*).

The overdrive recovery characteristic checked in the preceding example had a relatively short recovery time-duration, hence the Type 106 Squarewave Generator was used to turn the reed switch on and off. For applications involving long recovery time-durations, the MANUAL pushbutton on the fixture can be used, eliminating the need for the drive source.

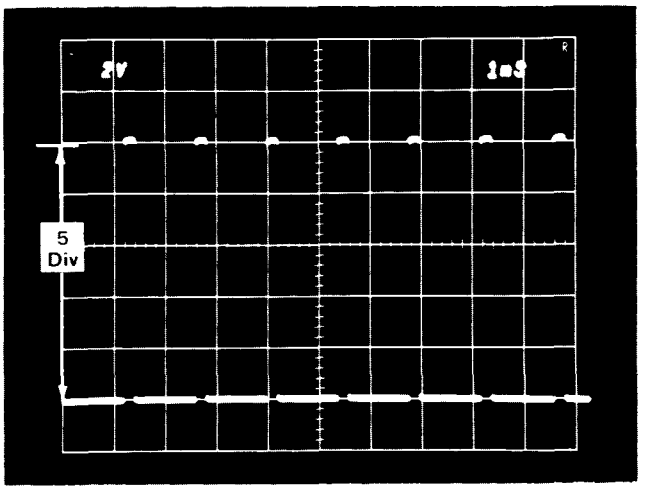


Fig. 1 Reference Amplitude
Sweep-rate: 1 ms/div

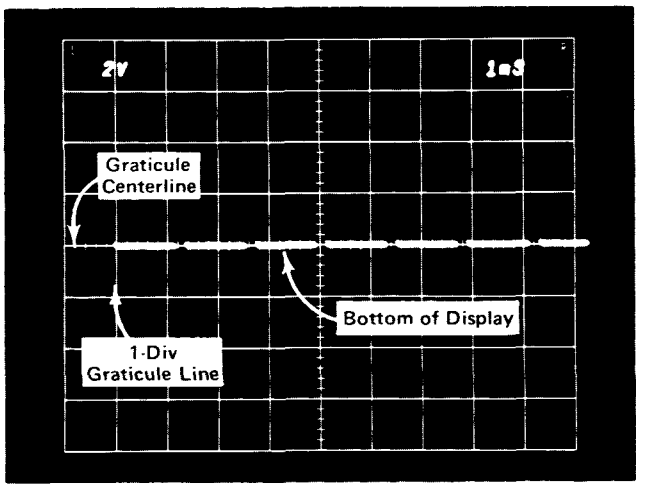


Fig. 2 Display Positioning
Sweep-rate: 1 ms/div

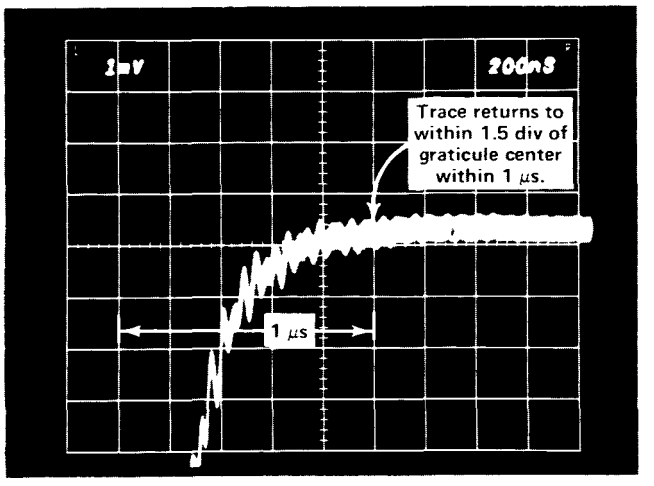


Fig. *3* Overdrive Recovery
Sweep-rate: 0.2 µs/div

SECTION 3

CIRCUIT DESCRIPTION

Diodes CR1 and CR2 provide circuit isolation in the event the +15 V and -15 V external power connections are reversed. Inductors L1, L2 and capacitors C1, C2 provide power supply decoupling. Switch S1 selects positive or negative pulse output as determined by the polarity of the 15 volt supply voltage selected. The LEVEL control R3 adjusts the base drive to Q1 and Q2, permitting adjustment of the output voltage. Capacitor C3 is a high frequency bypass.

SECTION 4

MAINTENANCE

Visual Inspection

The instrument should be visually inspected occasionally for such defects as poor connections, broken or damaged parts, improperly seated transistors, and heat damaged parts. The remedy for most of these defects is obvious. A heat damaged part is usually the symptom of some defect that is not obvious. The cause of overheating should be determined and corrected before the part is replaced, otherwise the damage may be repeated.

Transistor Checks

Periodic preventive maintenance checks on the transistors are not recommended. Satisfactory operation of the instrument in all respects is adequate assurance that the transistors are performing properly.

Ordering Parts

Many of the components are standard electronic parts that may be purchased locally. However, all standard parts in the instrument can be obtained from Tektronix through your local Tektronix Field Engineer or Field Office. Before ordering, consult the parts list of this manual to determine the value, tolerance, and rating required. Some of the parts used are not standard parts and may or may not be available for replacement. Consult any particular replacement with your local Tektronix Field Engineer or Field Office.

Caution

When replacing the back cover with a completely new one, also replace the clear tape inside the cover. This tape acts as a component insulator and is necessary for proper operation. The tape may be replaced with any similar tape having adhesive backing.

CHECK OUT LIST

For the following performance checks, the fixture is connected to the input of a Tektronix 7-series Amplifier installed in a 7000-series Oscilloscope, and driven with a Tektronix Type 106 Squarewave Generator as outlined in Section 2, Operation Instructions.

1. Check reed coil operation as indicated by audible resonance.

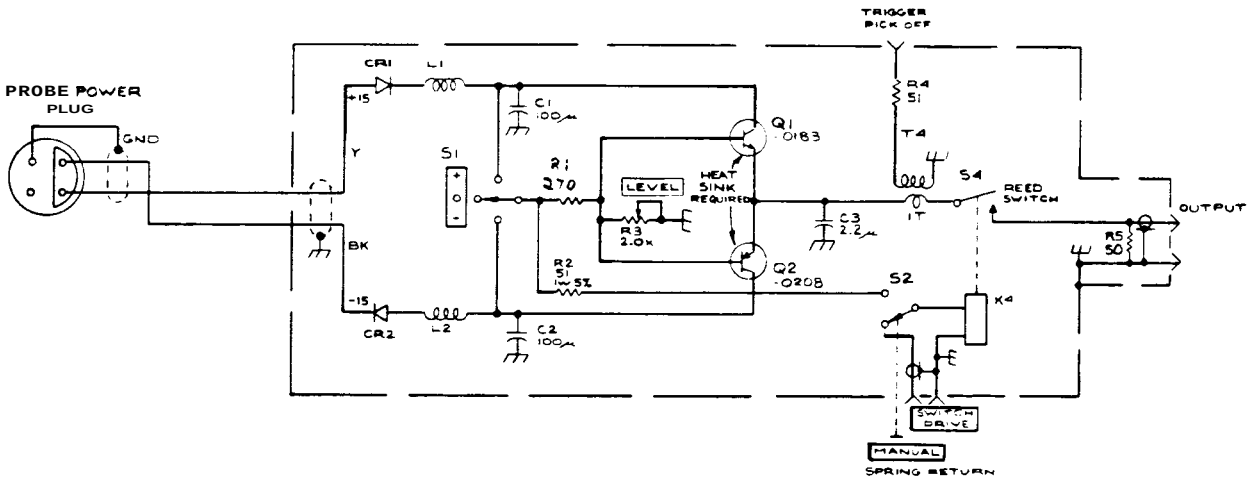
2. Check LEVEL control and **POLARITY** switch for + (-) 100 mV or less to at least + (-) 11V as indicated by amplitude displayed. Check switch center OFF.

3. Check MANUAL operation for a DC trace shift when button is depressed.

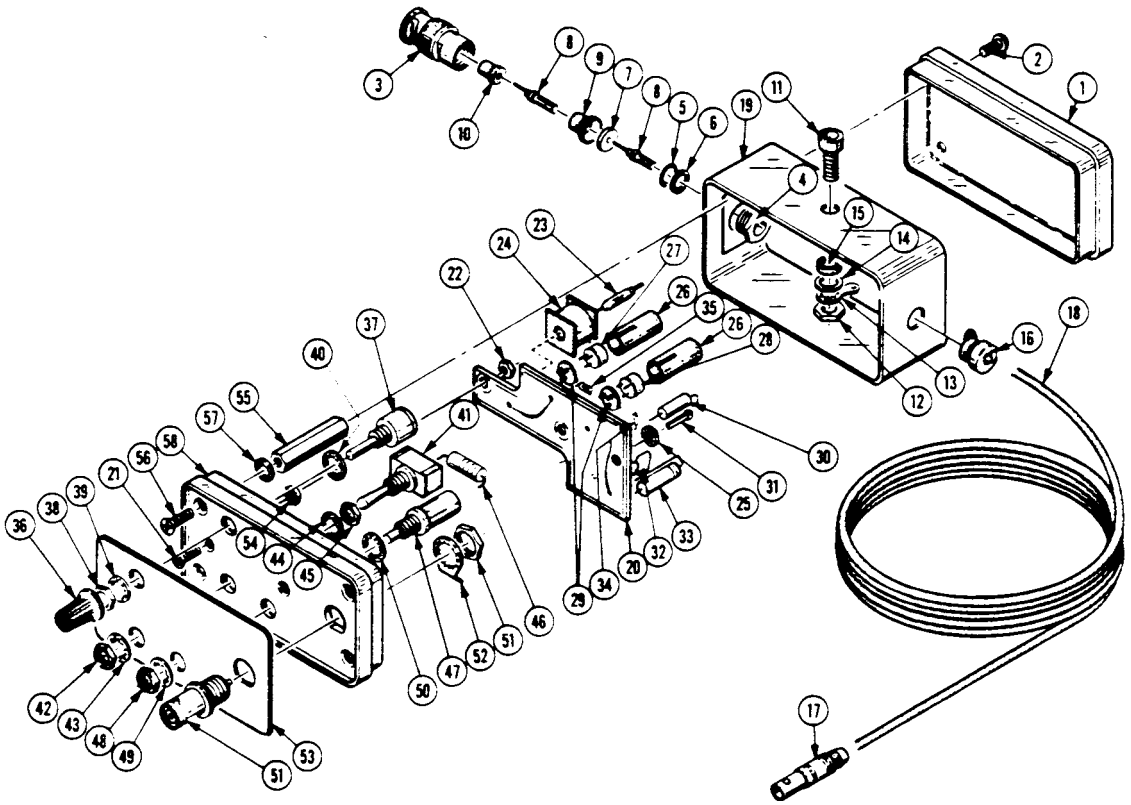
4. Measure falltime of displayed signal.

SECTION *5*

SCHEMATIC DIAGRAMS



SECTION 6
ELECTRICAL & MECHANICAL PARTS LIST



CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City. State, Zip Code
00213	NYTRONICS COMPONENTS GROUP INC SUBSIDIARY OF NYTRONICS INC	ORANGE ST	DARLINGTON SC 29532
01121	ALLEN-BRADLEY CO	1201 SOUTH 2ND ST	MILWAUKEE WI 53204
02660	BUNKER RAMO CORP AMPHENOL NORTH AMERICA DIV	2801 S 25TH AVE	BROADVIEW IL 60153
03888	KDI PYROFILM CORP	60 S JEFFERSON RD	WHIPPANY NJ 07981
04222	AVX CERAMICS DIV OF AVX CORP	19TH AVE SOUTH P O BOX 867	MYRTLE BEACH SC 29577
04713	MOTOROLA INC SEMICONDUCTOR GROUP	5005 E MCDOWELL RD	PHOENIX AZ 85008
09353	C AND K COMPONENTS INC	15 RIVERDALE AVE	NEWTON MA 02158
12327	FREEWAY CORP	9301 ALLEN DR	CLEVELAND OH 44125
13511	AMPHENOL CADRE DIV BUNKER RAMO CORP		LOS GATOS CA
19701	MEPCO/ELECTRA INC A NORTH AMERICAN PHILIPS CO	P O BOX 760	MINERAL WELLS TX 76067
21317	ELECTRONIC APPLICATIONS CO	4918 SANTA MITA AVE	EL MONTE CA 91734
24931	SPECIALTY CONNECTOR CO INC	2620 ENDRESS PLACE P O BOX D	GREENWOOD IN 46142
26769	MEPCO/ELECTRA INC A NORTH AMERICAN PHILIPS COMPANY	5900 AUSTRALIAN AVE	WEST PALM BEACH FL 33407
28520	HEYCO MOLDED PRODUCTS	147 MICHIGAN AVE P O BOX 160	KENILWORTH NJ 07033
46384	PENN ENGINEERING AND MFG CORP	P O BOX 311	DOYLESTOWN PA 18901
71159	BRISTOL SOCKET SCREW CO		WATERBURY CT
73743	FISCHER SPECIAL MFG CO	446 MORGAN ST	CINCINNATI OH 45206
77900	SHAKEPROOF DIV OF ILLINOIS TOOL WORKS	SAINT CHARLES RD	ELGIN IL 60120
78169	ILLINOIS TOOL WORKS INC SHAKEPROOF DIVISION	ST CHARLES ROAD	ELGIN IL 60120
80009	TEKTRONIX INC	4900 S W GRIFFITH DR P O BOX 500	BEAVERTON OR 97077
81073	GRAYHILL INC	561 HILLGROVE AVE P O BOX 373	LA GRANGE IL 60525
83385	MICRODOT MANUFACTURING INC GREER-CENTRAL DIV	3221 W BIG BEAVER RD	TROY MI 48098
86928	SEASTROM MFG CO INC	701 SONORA AVE	GLENDALE CA 91201
91836	KINGS ELECTRONICS CO INC	40 MARBLEDALE ROAD	TUCKAHOE NY 10707
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61101
98978	INTERNATIONAL ELECTRONIC RESEARCH CORP SUB OF DYNAMICS CORP OF AMERICA	135 W MAGNOLIA BLVD	BURBANK CA 91502
TK0435	LEWIS SCREW CO	4114 S PEORIA	CHICAGO IL 60609

Fig. 6

Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-	067-0608-00			1	FIXTURE,CAL:RECOVERING TIME	80009	067-0608-00
-1	200-0327-03			1	.PANEL.REAR: (ATTACHING PARTS)	80009	200-0327-03
-2	211-0542-00			4	.SCREW,MACHINE:6-32 X 0.312,TRH,STL (END ATTACHING PARTS)	TK0435	ORDER BY DESCR
-3	134-0044-00			1	.SHELL, ELEC CONN:BNC (ATTACHING PARTS)	02660	31-202-1002
-4	132-0081-00			1	.BSHG,MACH THD:0.437-28 X 0.433 HEX X 0.312. .BRS SIL PL	24931	N101-2
-5	210-0940-00			1	.WASHER,FLAT:0.25 ID X 0.375 OD X 0.02,STL	12327	ORDER BY DESCR
-6	210-1103-00			1	.WASHER,GROUND:0.25 ID X 0.003 THK,CU BE SIL . PL.0.35 OD (END ATTACHING PARTS)	80009	210-1103-00
-7	307-0086-00			1	.RES,FXD,FILM:50 OHM,1%	03888	A3FT08-5050F
-8	214-0503-00			2	.CONTACT,ELEC:50 OHM TERMN BNC,BRASS	80009	214-0503-00
-9	361-0081-00			1	.SPACER,SUPPORT:0.316 L X 0.39 DIA,PP	80009	361-0081-00
-10	358-0072-00			1	.INSUL,BSHG:0.192 ID X 0.192 OD X 0.323	80009	358-0072-00
-11	136-0138-00			1	.JACK,TIP:BANANA,BLACK (ATTACHING PARTS)	80009	136-0138-00
-12	210-0465-00			1	.NUT,PLAIN,HEX:0.25-32 X 0.375,BRS CD PL	73743	3095-402
-13	210-0223-00			1	.TERMINAL,LUG:0.26 ID,LOCKING,BRZ TIN PL	86928	5441-37
-14	210-1025-00			1	.WASHER,FLAT:0.312 ID X 0.469 OD X 0.031,BRS	12327	ORDER BY DEXR
-15	210-0895-00			1	.WASHER.SHLDR:0.255X0.375X0.105,NYL (END ATTACHING PARTS)	80009	210-0895-00
-16	358-0091-00			1	.BSHG,STRAIN RLF:U/W 0.19 OD CABLE,STR	28520	1060 (SR 2M-4)BL
	198-2016-00			1	.WIRE SET,ELEC:	80009	198-2016-00
-17	131-0778-00			1	..CONN,PLUG,ELEC:'LEMO',2 MALE,2 FEMALE	91836	1905-1
-18	175-0072-00			AR	..CABLE,SP,ELEC:2,26 AWG TW PR,SHLD,VINYL	80009	175-0072-00
-19	380-0212-00			1	.HSG,CAL FIXTURE:ALUMINUM	80009	380-0212-00
-20	670-1213-00	B010100	B019999	1	.CIRCUIT BD ASSY:COMP	80009	670-1213-00
	670-1213-01	B020000	B029999	1	.CIRCUIT BD ASSY:MAIN	80009	670-1213-01
	670-1213-02	B030000		1	.CIRCUIT BD ASSY:MAIN (ATTACHING PARTS)	80009	670-1213-02
-21	211-0105-00	B010100	B019999	2	.SCREW,MACHINE:4-40 X 0.188,FLH,100 DEG	TK0435	ORDER BY DESCR
	211-0114-00	B020000		2	.SCREW,MACHINE:4-40 X 0.438,FLH,100 DEG,STL	83385	ORDER BY DESCR
-22	210-0551-00	B020000		2	.NUT,PLAIN,HEX:4-40 X 0.25,ST CD PL (END ATTACHING PARTS)	TK0435	ORDER BY DEXR
					.CIRCUIT BOARD ASSMBLY INCLUDES:		
-23	260-0693-00	B010100	B019999	1	..SWITCH,REED:	80009	260-0693-00
	260-1137-00	B020000		1	..SWITCH,REED:SPST,1A,50V ..(S4)	21317	750A-AG
-24	108-0600-00	B010100	B019999	1	..COIL,REED SW:	80009	108-0600-00
	108-0357-00	B020000		1	..COIL,REED SW:6VDC,37MA,SINGLE REED ..(K4)	80009	108-0357-00
-25	120-0382-00			3	..COIL,RF:210UH,+28%-43%,14 TURNS ..(L1,L2,L4)	80009	120-w-00
-26	214-0269-00			2	..HEAT SINK,XSTR:0.312 DIA X 0.75 L	98978	TXD-032-75
-27	151-0183-00			1	..TRANSISTOR:NPN,SI,TO-39 ..(Q1)	04713	ST1512
-28	151-0208-02			1	..TRANSISTOR:PNP.SI,TO-39 ..(Q2)	80009	151-0208-02
-29	136-0365-00			2	..SKT,PL-IN ELEK:TRANSISTOR,3 CONTACT	80009	136-0365-00
-30	152-0040-00			2	..SEMICOND DVC,DI:RECT,SI,600V,1A,DO-41 ..(CR1,CR2)	80009	152-0040-00
-31	214-0579-00			1	..TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-32	283-0164-00			1	..CAP,FXD,CER DI:2.2UF,20%,25V ..(C3)	04222	SR402E225MAA
-33	290-0309-00			2	..CAP.FXD,ELCTLT:100UF,20%,25V ..(C1,C2)	26769	40LW107B025 MIA
-34	308-0385-00			1	..RES,FXD,WW:200 OHM,5%,3W ..(R1)	00213	1240S-200-5
-35	315-0510-00			1	..RES,FXD,FILM:51 OHM,5%,0.25W ..(R4)	19701	5043CX51R00J
	198-2734-00	B010100	B029999	1	..WIRE SET,ELEC:	80009	198-2734-00
	198-2734-01	B030000		1	..WIRE SET,ELEC:	80009	198-2734-01

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-36	366-1125-00			1	.KNOB:GY,0.127 ID X 0.5 OD X 0.531 H	80009	366-1125-00
	213-0246-00			1	..SETSCREW:5-40 X 0.094,STL	71159	ORDER BY DESCR
-37	311-0949-00			1	.RES,VAR,NONWW:TRMR,2K OHM,0.5W .(R3) (ATTACHING PARTS)	01121	u-7789
-38	210-0583-00			1	.NUT,PLAIN,HEX:0.25-32 X 0.312,BRS CD PL	73743	a-20319-402
-39	210-0940-00			1	.WASHER,FLAT:0.25 ID X 0.375 OD X 0.02,STL	12327	ORDER BY DESCR
-40	210-0046-00			1	.WASHER,LOCK:0.261 ID,INTL.0.018 THK,STL (END ATTACHING PARTS)	77900	1214-05-00-0541C
-41	260-0399-00	B010100	B010149	1	.SWITCH,TOGGLE:DPDT,2A,115VAC	80009	260-0399-00
	260-1206-00	8010150		1	.SWITCH,TOGGLE:SPDT,5A,115VAC CENTER OFF .(S1) . (ATTACHING PARTS)	09353	7103SYZQ
-42	210-0583-00			1	.NUT,PLAIN,HEX:0.25-32 X 0.312,BRS CD PL	73743	a-20319-402
-43	210-0940-00			1	.WASHER,FLAT:0.25 ID X 0.375 OD X 0.02,STL	12327	ORDER BY DESCR
-44	210-0046-00			1	.WASHER.LOCK:0.261 ID,INTL,0.018 THK,STL	77900	1214-05-00-0541C
-45	210-0562-00			1	.NUT,PLAIN,HEX:0.25-40 X 0.312 BRS CD PL (END ATTACHING PARTS)	73743	20224-402
-46	303-0510-00			1	.RES,FXD,CMPSN:51 OHM,5%,1W .(R2)	01121	GB5105
-47	260-0689-00			1	.SWITCH,PUSH:SPDT,0.25A,115V .(S2) (ATTACHING PARTS)	81073	46YY2107-2
-40	210-0583-00			1	.NUT,PLAIN,HEX:0.25-32 X 0.312,BRS CD PL	73743	a-20319-402
-49	210-0940-00			1	.WASHER,FLAT:0.25 ID X 0.375 OD X 0.02,STL	12327	ORDER BY DESCR
-50	210-0046-00			1	.WASHER,LOCK:0.261 ID.INTL.0.018 THK,STL (END ATTACHING PARTS)	77900	1214-05-00-0541C
-51	131-0955-00			1	.CONN,RCPT,ELEC:BNC,FEMALE (ATTACHING PARTS)	13511	31-279
-52	210-0255-00			1	.TERMINAL,LUG:0.391 ID,LOCKING,BRS CD PL (END ATTACHING PARTS)	12327	ORDER BY DESCR
-53	333-1314-00	B010100	B019999	1	.PANEL,FRONT:	80009	333-1314-00
	333-1314-01	B020000		1	.PANEL.FRONT:	80009	333-1314-01
	361-0094-00	B010100	B019999	2	.SPACER,POST:0.25 L 0.188 HEX HD	46384	SOA 440-8
-54	210-0004-00	B010100	8019999	2	.WASHER,LOCK:#4 INTL,0.015 THK,STL	77900	1204-00-00-0541C
	210-0586-00	8020000		2	.NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-55	385-0168-00			4	.SPACER,POST:1.168 L W/6-32 THD EA END,AL (ATTACHING PARTS)	80009	385-0168-00
-56	211-0538-00			4	.SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG,STL	93907	ORDER BY DESCR
-57	210-0006-00			4	.WASHER.LOCK:#6 INTL.0.018 THK,STL (END ATTACHING PARTS)	77900	1206-00-00-0541C
-58	200-0327-04			1	.SUBPANEL,FRONT:	80009	200-0327-04
					STANDARD ACCESSORIES		
	062-1127-00			1	MANUAL,TECH:INSTRUCTION	80009	062-1127-00